disassembled, and the product collected on a paper filter and washed with about 100cc of methanol. The washed polyethylene product is dried on the filter, followed by drying to constant weight in a vacuum oven at 80° C. Results for particle size and efficiency of polyolefin production are given, along with PFA information, in several of the preceding tables of this experimental section.

We claim:

1. A precision fragmentation assemblage wherein said assemblage comprises:

   (A) a plurality of fragmentation domains; and

   (B) one or more fragmentation zones;

   wherein said fragmentation domain comprises at least one first polymer; and

   wherein said fragmentation zone comprises:

   (i) one or more connecting phases;

   (ii) optionally, one or more pore phases; and

   (ii) optionally plural polymeric nanoparticles; and

   wherein said connecting phase comprises at least one second polymer; and

   wherein said nanoparticles comprise at least one third polymer.

2. A precision fragmentation assemblage catalyst, wherein said catalyst comprises:

   (A) a precision fragmentation assemblage; and

   (B) at least one catalytic component;

   wherein said precision fragmentation assemblage comprises:

   (i) a plurality of fragmentation domains; and

   (ii) one or more fragmentation zones;

   wherein said fragmentation domain comprises at least one first polymer; and

   wherein said fragmentation zone comprises at least one connecting phase, said connecting phase comprising at least one second polymer.

3. The catalyst of claim 2, wherein said catalyst further comprises at least one activator component.

4. The catalyst of claim 2, wherein said fragmentation zone further comprises at least one pore phase.
5. The catalyst of claim 2, wherein said fragmentation zone further comprises plural polymeric nanoparticles comprising at least one third polymer.
6. The catalyst of claim 2, further comprising one or more tether groups covalently bound to a polymeric chain, wherein said polymeric chain is a chain selected from the group consisting of said first polymer, said second polymer, and combinations thereof.
7. The catalyst of claim 5, further comprising one or more tether groups covalently bound to a polymeric chain, wherein said polymeric chain is a chain selected from the group consisting of said first polymer, said second polymer, said third polymer, and combinations thereof.
8. The catalyst of claim 2, wherein said catalytic component is an organometallic catalyst based on a metal, wherein said metal is a metal selected from the group consisting of metals of Group 3-11, lanthanide metals, actinide metals, and combinations thereof.
9. The catalyst composition of claim 3, wherein said activator component is an activator component selected from the group consisting of organoaluminum compounds, organoaluminoxane compounds, hydroxyaluminoxanes, aluminoxinates, organic borane compounds, inorganic borane compounds, borate anions, and mixtures thereof.
10. An olefin polymerization process, wherein said olefin polymerization process comprises:

    (A) contacting at least one olefin monomer with at least one precision fragmentation assemblage catalyst;

    (B) polymerizing said olefin monomer to produce a polyolefin;

    (C) isolating said polyolefin,

    wherein said catalyst comprises:

    (i) a prefragmentation assemblage; and

    (ii) at least one catalytic component;

    wherein said prefragmentation assemblage comprises:

(a) a plurality of fragmentation domains; and

(b) one or more fragmentation zones;

wherein said fragmentation domain comprises at least one first polymer; and

wherein said fragmentation zone comprises at least one connecting phase, said connecting phase comprising at least one second polymer.